PRELIMINARY ASSESSMENT REPORT
UNION PACIFIC
(EPA ID NO. CAD983581844)

Prepared for:

U.S. Environmental Protection Agency
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1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA), Region IX Site Evaluation Section, under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA) has tasked Roy F. Weston, Inc. (WESTON) to conduct a Preliminary Assessment (PA) of the Union Pacific site (also known as Union Pacific Railroad Yard or Western Pacific Rail Yard), in Sacramento, Sacramento County, California.

The purpose of a PA is to review existing information available on the site and its environs to assess the threat(s), if any, posed to public health or the environment and to determine if further investigation under CERCLA/SARA is warranted. The scope of this PA included review of information available from Federal, State, and local agencies, completion of a comprehensive target survey, and performance of an onsite reconnaissance visit.

Using these sources of information, the site is then evaluated using revised EPA's Hazard Ranking System (HRS) criteria to assess the relative threat associated with actual or potential releases of hazardous substances at the site. The HRS has been adopted by the EPA to help set priorities for further evaluation and eventual remedial action at hazardous waste sites. The HRS is the primary method of determining a site's eligibility for placement on EPA's National Priorities List (NPL). The NPL identifies sites at which EPA may conduct remedial response actions. This report summarizes the findings of the preliminary investigative activities.

1.1 Apparent Problem

The Union Pacific site was identified as a potential hazardous waste site and entered into the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database in May 1991, following a telephone call to the EPA from a concerned citizen living adjacent to the site.[1] In the telephone call, the resident expressed concern that the California Department of Health Services (DHS) was not adequately addressing the problem of heavy metals contamination at the site and that runoff from the site enters his property.

2.0 SITE DESCRIPTION

This section describes the location, site specifics and operational history of the Union Pacific site based upon available information obtained during the PA.

2.1 Location

The Union Pacific site is located at 3675 Western Pacific Avenue, in Sacramento, California, Township 8 North, Range 4 East, Section 13 and Township 8 North, Range 5 East, Section 18, Mount Diablo Baseline and Meridian (Latitude: 38° 32' 34.3"; Longitude: 121° 28' 54.4").[2,3] The site location is shown on Figure 1. Land use within one mile of the site is commercial and residential.[4] Directly north and east of the site are residences. To the south are commercial or light industrial properties. West of the site are Sacramento City College, U.S. Cold Storage and residences.

2.2 Site Description[4,5]

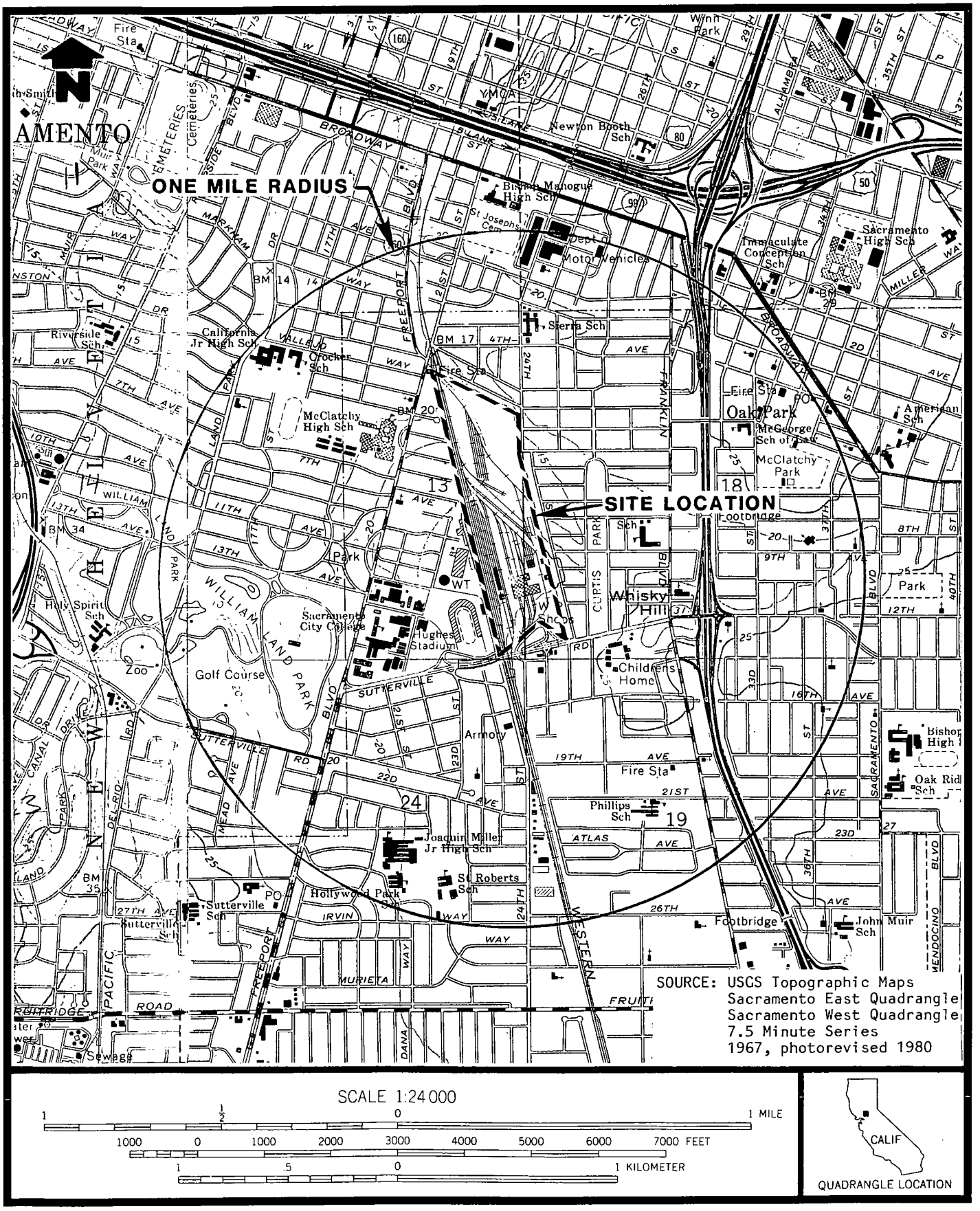
The site is owned by Union Pacific Railroad Company (UPRR) and can be divided into two general areas: active and inactive. The inactive portion of the site was the former location of a railroad maintenance yard and is approximately 63 acres in area. Currently, there are no buildings on the inactive portion of the site and it is surrounded by a fence. The active portion of the site is west of the inactive area and is approximately 31 acres in area. The active area includes a railroad through line, tracks used for switching of rail cars and a yard office. Figure 2 presents the general layout of the site including the location of buildings formerly on the inactive portion of the site.

Average rainfall in Sacramento is 16.86 inches per year.[6] The mean annual temperature is 60°F with a monthly average high temperature of 90°F in July and a monthly average low temperature of 40°F in January.[6] The prevailing wind in the vicinity of the site is from the southwest with an average speed of 8 mph.[6]

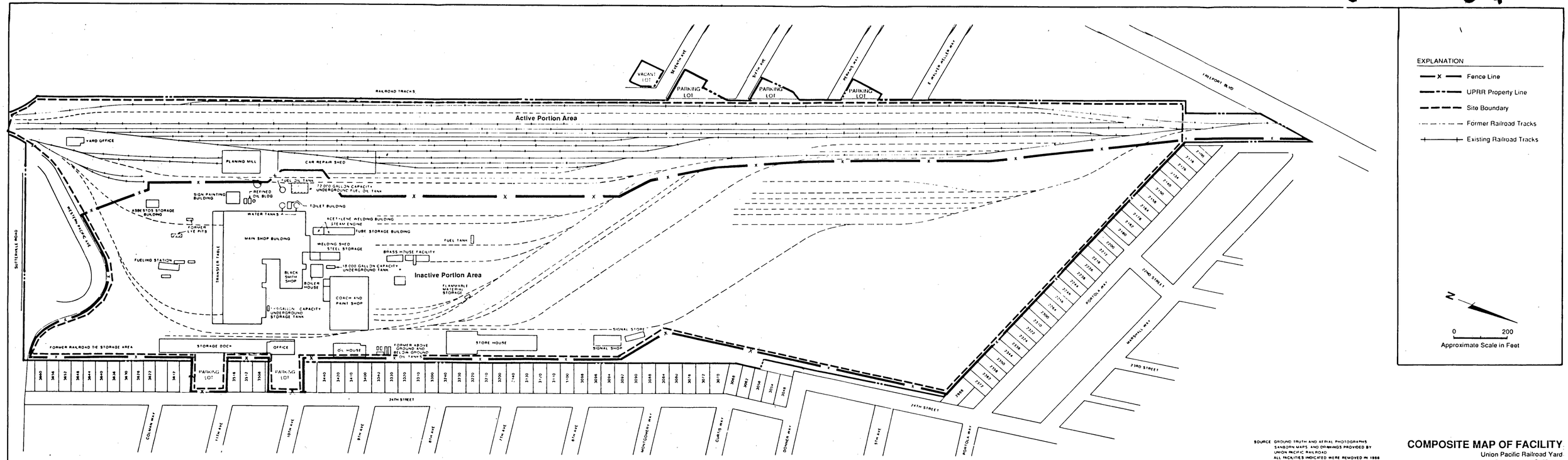
2.3 Operational History[6]

A railroad maintenance operation was established onsite in the early 1900's by Western Pacific Railroad (WPRR). Prior to the construction of the railroad yard, the site was used for agriculture. Records indicate that livestock, dairy farms, row crops and orchards were located in the vicinity of the site in the late 1800's and early 1900's.

Early WPRR operations included maintenance and repair of steam locomotives and rail cars. Sand-blasting, painting, machining, welding, dismantling and reassembly are likely past activities. Diesel engine repair began in the 1950's. Based on interviews with former employees, the following types of chemicals were likely used onsite: caustic solution, paints, oil, lye, petroleum fuels, asbestos and degreasing solvents. Wastewater onsite entered several oil-water separators through a concrete-lined drain system. Overflow from the separators entered the combined storm/sanitary sewer. Waste oil and sludges from the oil-water separators were reportedly removed periodically, but there are no records of these activities. Solid waste was apparently buried in trenches in an area in the center of the property, north of the main operations area. An unlined surface impoundment in the central portion of the property may have also received liquid wastes.



SITE LOCATION MAP
UNION PACIFIC, SACRAMENTO, CALIFORNIA
FIGURE 1



SOURCE: Dames & Moore

SOURCE GROUND TRUTH AND AERIAL PHOTOGRAPHS SANBORN MAPS AND DRAWINGS PROVIDED BY UNION PACIFIC RAILROAD. ALL FACILITIES INDICATED WERE REMOVED IN 1988

COMPOSITE MAP OF FACILITY
Union Pacific Railroad Yard
Sacramento, California
NOVEMBER 1991
FIGURE 2

The site was purchased by UPRR in 1982 and operations were discontinued in 1983. All buildings and surface structures were demolished in 1985 or 1986. UPRR has retained Dames and Moore as its consultant for the ongoing environmental investigations onsite.

2.4 Regulatory Involvement

This section presents a summary of regulatory involvement at the site.

2.4.1 U.S. EPA

This site was the subject of two previous PAs by EPA using the original HRS under the name Western Pacific Yard (EPA ID No. CAD980885321). At the time of the first PA in September 1986, EPA assigned the site a "pending" status, noting that the California Department of Health Services (DHS) would continue as lead agency.[7] The second PA, conducted in August 1988, resulted in a "No Further Action" status based on evaluation of pertinent HRS factors and information available at that time.[8] The 1988 PA concluded that there were low groundwater and surface water target populations and there was a low likelihood of documenting an observed release to air.

As described in Section 1.1 above, EPA entered the Union Pacific site into CERCLIS following receipt of a telephone call from a concerned citizen living adjacent to the site in May 1991. EPA decided that the site should be re-evaluated using the revised HRS. The assessment and report are the result of that decision.

2.4.2 California Department of Toxic Substances Control (DTSC)

DTSC (formerly DHS) has been the lead agency at the site since investigation began in the early 1980's. In November 1980, DHS conducted an inspection of the northern portion of the site near Portola Avenue and 22nd Street. DHS observed an open trench containing tires, timbers and other debris.[9] A WPRR representative also reported that pesticide rinse waters had been disposed of in the trench and that WPRR regularly disposed of rubbish material in trenches in that portion of the property. Two soil samples were collected in the open trench and analyzed for pesticides and pentachlorophenol. Traces of pentachlorophenol, 1,1-DDE and 2,4-D were detected in the samples. DHS inspected the site again in September 1981. During this inspection, DHS again observed trenches used for waste disposal in the northeast portion of the site.[10] DHS also observed a drum storage area with an unknown substance on the ground beside many barrels and a large area where the soil was covered with oil reportedly for dust control. Five soil samples were taken during this inspection and analyzed for metals and pesticides. Metals concentrations were generally low and no pesticides were detected. In August 1986, DHS again visited the site and collected soil samples. DHS noted that the fence around the site was in poor repair and torn down in places.[11] Stressed vegetation and areas void of vegetation were observed. Piles of rubble and airborne dust were observed due to demolition activities. During this inspection, nine soil samples were collected from the northern portion of the site in the area where landfilling of waste had occurred. Analysis of these samples showed elevated concentrations of arsenic, barium, lead, cadmium, zinc, petroleum hydrocarbons and asbestos.[12]

In 1987, DTSC entered into an Enforceable Agreement with UPRR which required UPRR to take specific Interim Remedial Measures (IRM) at the site, conduct a Remedial Investigation and Feasibility Study (RI/FS) and to prepare and implement a Remedial Action Plan (RAP).[13] The IRMs specified by the Enforceable Agreement included covering of asbestos contaminated soil and construction and maintenance of fencing around the perimeter of the site. UPRR submitted the RI/FS report in May 1991 with an Addendum RI/FS in November 1991. Currently, UPRR expects to submit the Final RAP report in October 1992.[4]

2.4.3 California Regional Water Quality Control Board (RWQCB)

The RWQCB Central Valley Region participated in a site inspection with DHS and has been sent copies of reports on the site but has not taken an active role due to DTSC's position as lead agency.

3.0 INVESTIGATIVE EFFORTS

As mentioned above, UPRR through their consultant, Dames and Moore, has completed a RI/FS and several IRMs at the Union Pacific site. Since 1987, over 53 soil borings, 41 groundwater monitoring wells, and 250 test pits have been utilized to investigate soil and groundwater conditions onsite.[5,6] Over 600 soil samples have been analyzed for selected heavy metals and over 700 soil samples have been analyzed for organic compounds. Groundwater samples have been collected on and offsite from two aquifer zones and analyzed for metals, volatile organic compounds, petroleum hydrocarbons, pesticides and polychlorinated biphenyls.

As a result of these investigative efforts, three categories of contaminants have been detected in soils onsite: metals, hydrocarbons and asbestos. Elevated arsenic and lead concentrations in soil have been found in several areas of the site and are apparently related to past site activities. Elevated concentrations of hydrocarbons have been found in ten general areas onsite. The presence of hydrocarbons appears to be associated with past locations of underground storage tanks or areas where fuels or oils may have been used.[6] In most areas, hydrocarbon contamination is limited to near-surface soils, however in one area, near the former Oil House Area, hydrocarbons have leached through soils to groundwater.[6] Soil contaminated with asbestos is onsite in the area of the former asbestos storage building. This area is currently capped.

Groundwater beneath the site has been found to contain elevated concentrations of several volatile organic compounds. Benzene, 1,2-DCA, 1,1-DCE, 1,1-DCA and TCE have been found at levels exceeding federal or state drinking water standards.[6] Groundwater modelling has indicated that groundwater contamination from the site would not impact drinking water wells for at least 30 years.[6]

Previous air monitoring has been inconclusive and an air monitoring program was in effect during the time this assessment was completed.

Based on these investigations UPRR is developing a Remedial Action Plan. From the conclusions of the RI/FS, likely remedial actions will include containment of contaminated soil using an engineered cap, excavation and offsite disposal of soil "hot spots" and excavation of soil containing concentrations of chemicals above remedial action objectives.[5] Groundwater

remedial actions may include groundwater extraction, treatment and discharge, coupled with long-term groundwater monitoring.[5]

4.0 HAZARD RANKING SYSTEM FACTORS

In accordance with the mandates outlined in CERCLA and SARA, the Hazardous Ranking System (HRS) was developed to accurately assess the relative degree of risk to human health and the environment posed by a potential hazardous waste site in order to determine the site's eligibility for the National Priorities List (NPL). The HRS addresses four exposure pathways representing means by which hazardous substances may pose a threat to human health and/or the environment. The pathways include three migration pathways (groundwater, surface water, and air) and one exposure pathway (soil). For each pathway, three factors are evaluated: likelihood of release of hazardous substances, targets, and waste characteristics.

The full HRS was applied to the groundwater, surface water and air pathways for the site utilizing the PREscore software package. Because of the limited information available regarding soil contamination in the residential areas surrounding the site, the EPA requested that the soil exposure pathway be evaluated using the Preliminary Assessment method which is a more conservative approach. The PA method is used when insufficient information is available to complete the evaluation using the full HRS.

This section presents a summary of the potential threats associated with each HRS exposure pathway for the Union Pacific site.

4.1 Sources of Contamination

Based on past site operations, the following potential sources of contamination have been identified by the RI/FS:[5,6]

- Former Maintenance Facilities — This area includes the former main shop and transfer table area, the car repair shed, coach and paint shop and the refined oil building. Solvents, paints, metals and waste oil were likely used or generated in these areas.

- Former Fuel Oil Facilities — Fuel oils were stored in the Oil House and were used in the fueling area and boiler house.

- Former Underground Storage Tanks (USTs) — At least eight USTs were utilized onsite and have been removed. These include a 72,000 gallon concrete bunker fuel tank located west of the main shop, an 18,000 gallon concrete bunker fuel tank located northwest of the Main Shop, five USTs located near the Oil House and a 1,000 gallon solvent tank located north of the Main Shop.

- Former Railroad Tie and Power Pole Storage Areas — Creosote treated wood was stored on the ground in these areas and is a potential source of hydrocarbon and metals contamination.

- Former Pond — Surface runoff or liquid wastes may have collected in a topographic depression located in the middle of the property.

- Former Landfill Area — Identified in the RI/FS report as the "Central Fill Area," various waste materials from the site may have been buried in this area. Test pits in the central fill area have found construction debris, railroad maintenance yard debris, old tires and drums containing unknown liquid. This area covers approximately 8-10 acres.

- Former Asbestos Handling Areas — An asbestos storage area was located in the southwest corner of the site. Approximately 1,600 cubic yards of asbestos-containing waste and soil have been removed from this area. Additionally, approximately 1,500 cubic yards of asbestos-contaminated soil still remains onsite. This contaminated soil is currently capped.

Based on soil sampling results, metals, petroleum hydrocarbons and asbestos are the three major categories of contaminants found in soils at the site.[5] Metal concentrations in the inactive portion of the site are elevated primarily in the former operations area and in the northwest corner of the site. In the active portion of the site, metal concentrations are elevated along the railroad tracks. The source of the metals may have been activities such as sandblasting, machining operations, production and use of babbitted bearings, and chemical storage. Additionally, slag used as track ballast may be a source of elevated metal concentrations in the vicinity of active railroad tracks and portions of the inactive site where tracks were located in the past.[5] Elevated levels of metals have also been found in the Central Fill Area of the site where wastes from site operations may have been deposited.[5] Dames and Moore estimates that approximately 24 acres of the site have elevated concentrations of arsenic and approximately 32 acres have elevated lead concentrations.[5] This figure was used for the purpose of scoring the site with HRS.

Petroleum hydrocarbons have been found in shallow soils in many areas of the site. The most significant areas of petroleum contamination appears to be in the former Oil House Area and in the Central Fill Area.[5]

Asbestos has been found onsite in the area of the former Asbestos Storage Building. Approximately 1,500 cubic yards of asbestos contaminated soil which also contains elevated heavy metals concentrations are in this area.[4] The asbestos contaminated soil has been temporarily capped with a layer of clean soil.[4]

In addition to the contaminants discussed above, sources of chlorinated volatile organic compounds are suspected to be present in the Central Fill Area[5] based on groundwater sampling data from the Oil House Area.

Low levels of PCBs have been detected in the vicinity of the former Transformer Vault Area.[5]

Groundwater sampling onsite has shown concentrations of chlorinated volatile organic compounds (VOCs). The source of the contamination is believed to be the Central Fill Area.[5] Elevated concentrations of benzene, toluene, ethylbenzene and xylene have been found in the vicinity of the Oil House Area.[5]

4.2 Groundwater Pathway

This section presents information on the hydrogeologic setting, groundwater targets, and conclusions regarding the groundwater pathway.

4.2.1 Hydrogeologic Setting

The soils beneath the site are described as the Victor Formation, the Laguna Formation and the Mehrten Formation.[13] The uppermost geologic unit is the Victor Formation which contains Pleistocene age deposits consisting of interlayered silt, sand, gravel and clay. The Victor formation is approximately 100 feet thick in the vicinity of the site and is moderately permeable. The Laguna Formation is beneath the Victor Formation and consists of interbedded silt, clay and sand as well as lenses of unsorted gravel of Tertiary-Quaternary age. The Laguna Formation is approximately 325 feet thick in the vicinity of the site and is generally less permeable than the Victor Formation. Underlying the Laguna Formation is the Mehrten Formation which consists of Pliocene age deposits including stratified andesitic sands with interbedded clays and andesite tuff-breccia. The Mehrten Formation ranges in thickness from 200 to 1,200 feet. The sands of the Mehrten Formation are highly permeable while the tuff-breccia yields little water.

Based on subsurface explorations conducted onsite using soil borings and test pits, the soils beneath the site have been classified into eight lithologic zones.[6] Groundwater at the site has been found in two of these zones. A shallow aquifer contains water at approximately 30 feet below ground surface and ranges from four to 30 feet thick. This aquifer consists of fine to medium-grained sand with permeabilities ranging from 1.1×10^{-3} to 6.1×10^{-4} cm/sec.[6] The groundwater flow direction in this zone is generally south in the northern portion of the site and southeast in the southern portion of the site. Underlying the shallow aquifer is an aquitard zone consisting of clay and silty clay with permeabilities ranging from 9.6×10^{-8} to 1.2×10^{-4}.[6] A deep aquifer zone was encountered at 60 feet below ground surface and consists of interbedded fine sands, silts and clays.

Forty-one groundwater monitoring wells have been installed on and around the site and are monitored quarterly.[4] Groundwater samples have been analyzed for metals, chlorinated volatile organic and aromatic compounds, polychlorinated biphenyls (PCBs), polyaromatic hydrocarbons (PAHs) and other water quality parameters. Groundwater sampling has shown that some elevated concentrations of metals have been found, but are generally limited to specific source areas and are in most cases below federal or state Maximum Contaminant Levels (MCLs). The most significant impact to groundwater appears to be from chlorinated volatile organic compounds (VOCs). PCBs, PAHs and pesticides were not detected in any samples from site monitoring wells. Table 1 summarizes the highest levels of selected compounds detected in groundwater as of May 1991.[6]

TABLE 1
Constituents Detected in Groundwater and Comparison With Regulatory Standards and Criteria

Constituent	Highest Concentration (μg/L)	Standard or Criteria (μg/L)	Basis for Standard or Criteria[a]
Benzene	14,000[c]	1	CA-MCL
Chlorobenzene	1.1	30	CA-MCL
Ethylbenzene	1,500[c]	680	CA-MCL
Toluene	1,500[c]	100	RDWAL
Xylene	3,800[c]	1,750	CA-MCL
1,1,1-Trichloroethane	45	200	CA-MCL
1,1,2-Trichloroethane	7.3	32	CA-MCL
1,1-Dichloroethane	50[c]	5	RDWAL
1,1-Dichloroethene	820	6	CA-MCL
1,2-Dichloroethane	360	0.5	CA-MCL
1,2-Dichloroethene	3.6	–	None
1,2-Dichloropropane	0.8	–	None
Carbon Tetrachloride	0.95	0.5	CA-MCL
Chloroform	13.0[d]	100	EPA-MCL[b]
cis-1,2-Dichloroethene	1.8	5	RDWAL
cis-1,3-Dichloropropane	<0.5	0.5	CA-MCL
Tetrachloroethylene	3.5	5	CA-MCL
Trichoroethene	13.0	5	CA-MCL
Arsenic	30	50	EPA-MCL
Barium	380	1,000	EPA-MCL
Beryllium	2.7	–	None
Cadmium	1.8	10	EPA-MCL
Chromium	470[d]	50	EPA-MCL
Chromium VI	16	–	None
Cobalt	91	–	None
Copper	71	4,000	AAL
Lead	63	50	EPA-MCL
Mercury	0.20	2	EPA-MCL
Molybdenum	50.4	–	None
Nickel	450	400	AAL
Silver	11	50	EPA-MCL
Vanadium	70[d]	–	None
Zinc	100[d]	8,000	AAL

a = Abbreviations are as follows:
EPA-MCL = Federal Maximum Contaminant Level
CA-MCL = California Department of Health Services Maximum Contaminant Level
RDWAL = California Department of Health Services Recommended Drinking Water Action Level
AAL = California Department of Health Services Applied Action Level for Risk Appraisal Process
b = MCL for total trihalomethanes (chloroform, bromoform, dichlorobromomethane, dibromochloromethane)
c = Hydropunch™ Samples
d = Values reported from a sampling round when samples were not filtered

4.2.2 Groundwater Targets

In accordance with the HRS, groundwater targets are evaluated by identifying uses of groundwater within a four-mile radius of the site, regardless of gradient.

The City of Sacramento relies primarily on the American and Sacramento Rivers for its drinking water supply and does not operate any municipal wells within four miles of the site.[14,15] However, several private domestic wells and wells operated by other municipal suppliers were identified within a four-mile radius.[16] The nearest drinking water well to the site is Fruitridge Vista Water Company Well #5, located approximately 1.8 miles southeast of the site. This well is part of a blended system and the apportioned drinking water population is approximately 1,000 persons. The total drinking water population served by wells within a four mile radius of the site is estimated to be 20,585 persons.[16] Additionally, there are several irrigation wells located at Land Park, one-half mile east of the site.[14]

4.2.3 Groundwater Conclusions

There is an observed release of VOCs to groundwater at the site.[5,6] An observed release is when the chemical analysis of an environmental sample from a site is found to be three or more times above the background concentration, and some portion of the release is attributable to the site. The likely source of this release is solvents or degreasers used in the Oil House, Coach and Paint Shop and Fueling Shop areas.[6] Groundwater modeling has estimated that 1,1 DCE would migrate a distance of 4,600 feet offsite in a period of 30 years.[6] The nearest groundwater well used for drinking water is located 1.8 miles southeast of the site. There are a relatively low number of groundwater targets.

4.3 Surface Water Pathway

This section presents information on the hydrologic setting, surface water targets, and provides conclusions for the surface water pathway.

4.3.1 Hydrologic Setting

The ground surface of the site is generally flat, with the exception of a scarp which runs northwest to southeast across the northern portion of the site.[4] An evaluation of surface water flow on the inactive portion of the site divided the area into five drainage sub-basins based on site topography.[6] It was concluded that runoff in three of the basins, two located in the northern portion and one in the southeast corner of the site, flows to storm drains.[6] It was not clear where runoff from a drainage basin located in the central portion of the site along the eastern property boundary was directed. However, this area is physically higher than the residences which border it so some portion of the runoff may flow towards these residences.[4] Runoff from the southern portion of the inactive site is directed to the active tracks area and is likely collected by storm drains.[6] The storm drains are part of a combined sanitary-storm sewer which is pumped to a holding pond near the Riverside Water Treatment Plant, then to a sewage treatment plant operated by Sacramento County, approximately eight miles south of the site.[15]

The Sacramento River is approximately one and one-half miles west of the site and the American River is approximately four miles north of the site.[2] There is no apparent pathway that would allow direct surface water migration from the site to these rivers.[4]

4.3.2 Surface Water Targets

No drinking water intakes were identified downstream from the site. The Sacramento River is used extensively for sport fishing and recreation and may be a habitat for endangered or threatened species.

4.3.3 Surface Water Conclusions

There is no pathway for migration of surface water from the site to the Sacramento or American Rivers. The majority of runoff from the site flows to storm drains and is treated at the Sacramento County sewage treatment plant. A portion of the site runoff may flow towards residences adjacent to the site on the east.

4.4 Soil Exposure and Air Pathways

This section presents information on the physical conditions at the site, soil and air targets, and conclusions for the soil exposure and air pathways.

4.4.1 Physical Conditions

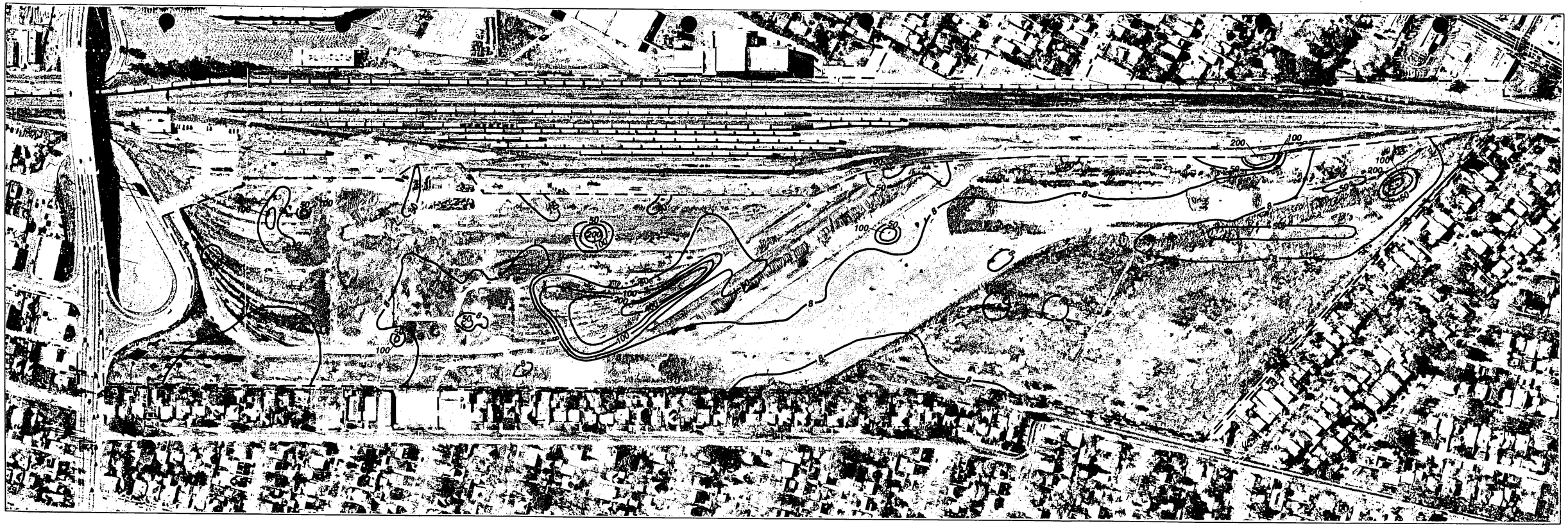
The inactive site is currently fenced with no buildings or onsite operations.[4] A portion of the inactive site (approximately 8-10 acres) was used in the past to bury waste. Excavations in this area have found construction debris, asphalt, tires and drums of unknown liquid.[4] The active site contains railroad tracks and building used for offices. Extensive soil sampling has been conducted onsite in soil borings and test pits.

As discussed in Section 3.1, the primary contaminants of concern in soil are metals, petroleum hydrocarbons, and asbestos.[5] Based on toxicity factors, arsenic appears to be the contaminant of greatest concern under the HRS. Background concentrations for arsenic, lead and copper were established based on samples collected at Land Park, approximately one-half mile west of the site.[6] In addition, UPRR and DTSC have collected samples from the backyards of residences bordering the site.[6] Some of these backyard samples have shown elevated high concentrations of copper and lead (greater than three times background). According to the RI/FS Report, elevated lead concentrations may be attributable to lead-based paint on the residences.[4,5]

DTSC reports that no correlation was found between arsenic and lead concentrations in soil at the UPRR site and the surrounding residences.[20] If the elevated metals concentrations in residential soils were attributable to the UPRR site, one would expect to see a trend in metals concentrations, such as a reduction in metals concentrations with distance from the site.[21] Based on sampling of three residences to the east and three residences to the west, DTSC has concluded that no such trend is observed.[21] DTSC asserts that potential sources of lead contamination could be automobile exhaust, interior or exterior paint, lead pipes and solder, and pesticides.[20] DTSC reported that paint chips were observed in the soil during sampling at some residences.[21] Potential sources of arsenic contamination include rodenticides, pesticides, herbicides and wood preservatives.[20] DTSC considers average lead concentrations above 300 mg/Kg or average arsenic concentrations above 75 mg/Kg to be cause for concern.[20]

As part of an IRM, lead and arsenic contaminated soil was removed from a vacant lot owned by UPRR and from a residential property.[17] However, soil containing lead up to 320 mg/Kg and arsenic up to 30 mg/Kg remain at a residential property.[17] Elevated metals concentrations in residences adjacent to the property have not been considered as Operable Units in the RI/FS. Table 2 summarizes background, backyard and onsite concentrations of arsenic and lead. Figure 3 shows arsenic concentration contours for near-surface soils.

Air sampling for metals, total particulates and asbestos was conducted onsite as part of the Remedial Investigation during October 1988. Downwind air samples showed an average particulate load of 24.0 micrograms per cubic meter which is comparable to the average particulate load in urban areas.[6] Arsenic, copper and lead were not detected in air samples.[6] Asbestos was detected in only one of five sampling events. The asbestos concentration detected was 0.0016 fibers per cubic centimeter which is within the range of typical urban conditions.[6] However, at the request of DTSC, a second air sampling program was in progress at the time of the site reconnaissance due to concerns that the first air sampling program may have been inadequate. The results of the most recent air sampling program are expected to be made available in September 1992.[4]



EXPLANATION

- Fence Line
- UPRR Property Line
- 8 — Approximate Soil Arsenic Concentration in mg/kg

N

0 200

Scale in Feet

ARSENIC CONCENTRATION CONTOURS FOR 0.0 to 0.5 FEET (bgs)

Union Pacific Railroad Yard
Sacramento, California
NOVEMBER 1991

FIGURE 3

SOURCE: Dames & Moore

TABLE 2
Metals Concentrations in Soil (mg/Kg)

Compound	Range	Average
Background (Land Park; September, October 1989)		
Arsenic	6.36 - 8.38	7.75
Copper	16.4 - 26.2	22.9
Lead	7.8 - 30.0	22.0
Background (East of site; December 1989)		
Arsenic	6.3 - 13	8.26
Copper	19.0 - 139	45.6
Lead	69.0 - 340	127.3
Onsite (1987 - 1991)		
Arsenic	0.18 - 600	
Copper	10 - 8600	
Lead	ND - 17,900	
Residential Lots (2207 7th Avenue)		
Arsenic	5.7 - 30	14.5
Copper	35.3 - 43.1	39.2
Lead	55 - 320	166

4.4.2 Soil and Air Targets

The population within one mile of the site is 20,881 persons.[16] Based on review of aerial photos and a map showing arsenic concentration contours, there are approximately 43 houses within 200 feet of arsenic contaminated soil.[6] Using the Sacramento average household population of 2.49 persons per household, there are 107 persons residing within 200 feet of arsenic contamination.[19] An additional 25 homes containing 62 persons are within 200 feet of lead contamination. There are an estimated 10 to 20 workers on the active portion of the site.[4] The nearest school is Sacramento City College which is adjacent to the site, and there are three other schools within one-quarter mile of the site.

4.4.3 Soil Exposure and Air Pathway Conclusions

There is an observed release of arsenic, lead and copper to the soil at the site. Arsenic contaminated soil is within 200 feet of approximately 107 persons. Elevated concentrations of arsenic and lead have been detected in the backyards of houses bordering the site.

There is uncertainty regarding the data developed by the October 1988 air sampling program for particulates and asbestos. A second air sampling program was in progress at the time of this assessment.

5.0 EMERGENCY RESPONSE CONSIDERATIONS

The National Contingency Plan [40 CFR 300.15 (b)(2)] authorizes EPA to consider emergency response actions at those sites which pose an imminent threat to human health and the environment. Emergency response actions are not considered necessary for this site at this time.

6.0 SUMMARY AND CONCLUSIONS

Union Pacific is a former railroad maintenance facility and an active railroad switching yard. The maintenance facility operated from the early 1900's to 1983. Chemicals used onsite include asbestos, paints, oil, fuels, solvents, and degreasers.

The pertinent HRS factors for the Union Pacific site are as follows:

- There is an observed release of chlorinated volatile organic compounds to groundwater onsite.
- The nearest drinking water well is approximately 1.8 miles southeast of the site. This well is operated by Fruitridge Vista Water Company and is part of a blended system.
- The total population served by drinking water wells within four miles of the site is approximately 20,585.
- Most surface water runoff from the site flows to storm drains which are connected to a combined sanitary-storm sewer. This water is pumped to a treatment plant operated by Sacramento County.
- There are no drinking water intakes within a 15-mile downstream distance of the site.
- There is an observed release to soil of arsenic, lead, asbestos and petroleum hydrocarbons.
- Approximately 105 persons reside within 200 feet of arsenic contaminated soil.

7.0 EPA RECOMMENDATION

	INITIAL	DATE
Site Evaluation Accomplished (SEA)		
High priority SSI		
Low priority SSI	cjd	10/30/92
Deferred to Other Authority (e.g. RCRA, TSCA, NRC)		

Notes:

8.0 REFERENCES

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2. U.S. Geological Society, Sacramento East, Sacramento West, Florin, Clarksburg Quadrangles, 7.5 minute series Topographic Maps, 1967, photo revised 1980.

3. Latitude/Longitude Worksheet.

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5. Dames & Moore, Addendum: Remedial Investigation/Feasibility Study Report, Union Pacific Railroad Yard, Sacramento, California, November 1991.

6. Dames & Moore, Addendum: Remedial Investigation/Feasibility Study Report, Union Pacific Railroad Yard, Sacramento, California, May 1991.

7. Ecology & Environment, Inc., Recommendations for Further Action, Western Pacific Rail Yard, September 20, 1986.

8. Thys, Beatrice, Ecology & Environment, Inc., Memorandum to LaCourreye, Paul, EPA, Subject: Reassessment of Western Pacific Rail Yard, August 17, 1988.

9. Department of Health Services (DHS), Surveillance and Enforcement Report, November 6, 1980.

10. Small, Debra, DHS, Memorandum to Jan Meyer, Mark White, Subject: WPRR Sacramento Yard, October 7, 1981.

11. DHS, Surveillance and Enforcement Report, August 27, 1986.

12. California Department of Health Services, Enforceable Agreement, March 26, 1987.

13. Olmstead, F.H. and Davis, G.H., Geologic Features and Groundwater Storage Capacity of the Sacramento Valley, U.S. Geological Society Water Supply Paper 1497, 1961.

14. Ball, Jr., Stephen D., Roy F. Weston, Inc., and Short, Walter, City of Sacramento, City of Sacramento Drinking Water Supply, Telephone Conversation, May 22, 1992.

15. Oatman, Brian A., Roy F. Weston, Inc., and Malmy, Duane, City of Sacramento Department of Water and Sewer, City of Sacramento Water Supply and Stormwater-Sewer Disposal, Telephone Conversation, July 27, 1992.

16. U.S. EPA GIS Center, Site Report, Union Pacific, June 3, 1992.

17. Dames & Moore, Report, Interim Remedial Measures Adjacent to Union Pacific Railroad yard, Sacramento, California, February 1992.

18. Dames & Moore, Transmittal of Data, Analytical Laboratory Results, Shallow Soil Investigation, Active Site Portion, Union Pacific Railroad Yard, Sacramento, California, March 1992.

19. Oatman, Brian A., Roy F. Weston, Inc., and Kunder, Florine, Sacramento Area Council of Governments, Average Household Population in Sacramento, Telephone Conversation, July 22, 1992.

20. California Department of Health Services, Union Pacific Railroad Sacramento Shops Site, Fact Sheet, July 1991.

21. Oatman, Brian A., Roy F. Weston, Inc. and Salcedo, Jose, Department of Toxic Substances Control, telephone conversation, August 21, 1992.

APPENDIX A

Contact Reports

PA CONTACT LOG

Facility Name: Union Pacific

Facility ID: CAD983581844

NAME	AFFILIATION	PHONE #	DATE
Walter Short	City of Sacramento	(916) 264-5371	05-22-92
Florine Kunder	Sacramento Area Council of Governments	(916) 457-2264	07-23-92
Duane Malmy	City of Sacramento	(916) 264-5040	07-27-92
Jose Salcedo	California Environmental Protection Agency	(916) 855-7896	08-21-92

CONTACT REPORT

AGENCY/AFFILIATION:	City of Sacramento	
DEPARTMENT:	Utilities Department, Water Division	
ADDRESS/CITY:	1391 35th Avenue/Sacramento	
COUNTY/STATE/ZIP:	Sacramento County/California/95814	
CONTACT(S)	**TITLE**	**PHONE**
Walter Short	Assistant Superintendent of Maintenance	(916) 264-5371
RFW PERSON MAKING CONTACT: Steve Ball, Jr.		**DATE:** 05-22-92
SUBJECT: Drinking water sources for Sacramento		
SITE NAME: Union Pacific		**EPA ID#:** CAD983581844

The City of Sacramento gets most of its drinking water from two intakes; one on the American River (located near Sacramento State University) and one on the Sacramento River (near the confluence of the American and Sacramento Rivers).

The city also uses several drinking water wells in North Sacramento and two wells in South Sacramento to supplement water from the rivers, but these are more than four miles from the subject site (near Sutterville Road and Freeport Boulevard).

In 1990 - 1991, the City of Sacramento had 112,859 service connections and an estimated population served of 374,600.

The ~~average annual~~ intake on the American River ~~is~~ WAS 12,702 million gallons ~~per year~~ IN FISCAL 1991 or 43.8 million gallons per day. The ~~average annual~~ intake on the Sacramento River ~~is~~ WAS 17,270 million gallons ~~per year~~ IN FISCAL 1991 or 60.8 million gallons per day.

VERIFIED BY CONTACT: Walter E Short	**DATE:** 9-16-92

CONTACT REPORT

AGENCY/AFFILIATION:	Sacramento Area Council of Governments	
DEPARTMENT:	REGIONAL CENSUS DATA CENTER	
ADDRESS/CITY:	3000 S Street/Sacramento	
COUNTY/STATE/ZIP:	Sacramento County/California/95816	
CONTACT(S)	**TITLE**	**PHONE**
Florine Kunder	RESEARCH SPECIALIST III	(916) 457-2264
RFW PERSON MAKING CONTACT: Brian Oatman		**DATE:** 07-23-92
SUBJECT: Persons per household for City of Sacramento		
SITE NAME: Union Pacific		**EPA ID#:** CAD983581844

According to 1990 census data, the average number of persons per household was 2.49.

~~VERIFIED BY~~ CONTACT: Florine Kunder	**DATE:** 8-11-92

CONTACT REPORT

AGENCY/AFFILIATION:	City of Sacramento	
DEPARTMENT:	Utilities Department, Water Division	
ADDRESS/CITY:	1391 35th Avenue/Sacramento	
COUNTY/STATE/ZIP:	Sacramento County/California/95814	
CONTACT(S)	**TITLE**	**PHONE**
Duane Malmy		(916) 264-5040
RFW PERSON MAKING CONTACT: Brian Oatman		**DATE:** 07-27-92
SUBJECT: Drinking water sources for Sacramento		
SITE NAME: Union Pacific		**EPA ID#:** CAD983581844

The Riverside Water Treatment Plant draws water from the Sacramento River and has a capacity of 13 million gallons per day, but averages 6 to 9 million gallons per day.

There are no drinking water wells used by the city within a four mile radius of the Union Pacific railyard site (near Sutterville Road and Freeport Boulevard). Wells at Land Park are used for irrigation. City well 20 is used for irrigation. City well 8 (at Broadway Avenue) is not used and there is no piping connecting it to the distribution system.

Sewage/storm water from the area of the site is pumped to Sump #2 near the Riverside WTP, then to the county sewage treatment plant off Franklin Boulevard.

VERIFIED BY CONTACT: Duane Malmy Mike Helm	**DATE:** 9-16-92

CONTACT REPORT

AGENCY/AFFILIATION:	California Environmental Protection Agency	
DEPARTMENT:	Department of Toxic Substances Control	
ADDRESS/CITY:	10151 Croydon Way, Suite 3/Sacramento	
COUNTY/STATE/ZIP:	Sacramento County/California/95827-2106	
CONTACT(S)	**TITLE**	**PHONE**
Jose Salcedo		(916) 855-7896
RFW PERSON MAKING CONTACT: Brian Oatman		**DATE:** 08-21-92
SUBJECT: DTSC cleanup levels for site, soil sampling at nearby properties		
SITE NAME: Union Pacific		**EPA ID#:** CAD983581844

DTSC has sampled soil at homes adjacent to site on two occasions. In 1989, sampled three houses east of site: 3098, 3400, and 3130 24th Street. In DTSC sampled vacant lots and three houses west of site. No other sampling of neighboring residential properties has been conducted. Mr. Salcedo stated that DTSC did not find any correlation between metals concentrations in soil at neighboring houses and metals concentrations at UPRR. There was not trend in metals contamination. If metals were attributable to UPRR, one would expect a decrease in metals concentrations in samples taken further away from the site. This was not the case. Paint chips were observed in soil at houses during sampling.

Soil containing above background levels of metals was not removed from 2207 7th Street because the results were below the DTSC level of concern of 300 ppm for lead and 75 ppm for arsenic. Mr. Salcedo reported that the sampling at that residence was conducted without an adequate sampling plan. Samples were taken in probable hot spots at the owner's request may not reflect the soil of the overall site.

VERIFIED BY CONTACT:	**DATE:**

"NO INITIALED CONCURRENCE RECEIVED AS OF OCTOBER 12, 1992"

SITE RECONNAISSANCE INTERVIEW AND OBSERVATIONS REPORT

PREPARED BY: Roy F. Weston, Inc.

OBSERVATIONS MADE BY: Steve Ball, Jr.
Brian A. Oatman
Joseph M. Demmler

DATE: July 23, 1992

FACILITY REPRESENTATIVE(S):

1. Timothy K. Parker, Dames and Moore (Consultant for Union Pacific)

2. Jose Salcedo, California Department of Toxic Substances Control (DTSC)

SITE NAME: Union Pacific
(aka Union Pacific Railroad Yard,
Western Pacific Rail Yard)

EPA ID#: CAD983581844
CAD980885321

Owner/Operator History

The Union Pacific Railroad Yard was established in the early 1900s by Western Pacific Railroad. Operations included maintaining and rebuilding steam locomotive boilers, refurbishing rail cars, and diesel engine repair. The Sacramento Yard was Western Pacific's main overhaul yard on the west coast up to the early 1960s. The site consists of two areas: the inactive former maintenance facility and an active railroad through line and car switching yard.

In 1982, Union Pacific purchased the site. Operations were discontinued in 1983 with all buildings and structures being demolished in or before 1986.

Information Provided

Environmental investigative work from 1986 to present has been completed by Dames and Moore. A Remedial Investigation/Feasibility Study (RI/FS) report includes all work up to summer 1990. A RI/FS Addendum includes work from summer 1990 to summer 1991. These reports have been provided to WESTON by Dames and Moore. Previous work did not include the active railroad track area (west of the inactive, former maintenance yard). Recent sampling efforts have included the active railroad track area and will be described in an upcoming RI/FS Supplement. Also, a draft Remedial Action Plan (RAP) is scheduled to be completed in October, 1992.

Dames and Moore is currently conducting an air monitoring program at the site at the request of the Department of Toxic Substances Control (DTSC). DTSC believes previous air sampling efforts may have been inadequate. Present air sampling is for metals, particulates, and asbestos based on high soil concentrations of those compounds. Air monitoring for volatile organics has never been conducted based on low compound concentrations found in soil sampling efforts. The air monitoring program will end on August 4, 1992, with a report due out in early September.

Groundwater monitoring is being conducted on a quarterly basis. There are currently 41 monitoring wells onsite and offsite which are sampled by Dames and Moore. Samples are tested for 601s, 602s, arsenic, copper, lead, and zinc, with the specific analytes depending on the well. Chlorinated volatile organics have been the major contaminant of concern.

Dames and Moore has recently completed an onsite well abandonment and underground storage tank (UST) removal. The well consisted of an approximately 20 foot deep concrete box (4'x 4') with a steel cased well(60-65 feet deep) inside of the box. The well casing was grouted up, the concrete cut off at 5 feet below ground surface and the area backfilled. The well was previously used as an onsite water supply.

The UST removed was located on the west side fenceline adjacent to the active railroad track area. Before removal, the 72,000 gallon concrete tank was emptied and cleaned. The concrete tank was then broken up and hauled offsite for disposal. Product lines running to the active area were also removed and sealed up to the fenceline. A few yards of petroleum hydrocarbon contaminated soil were removed from around the product lines. Approximately one dozen soil samples were collected from beneath the tank after removal and analyzed for total petroleum hydrocarbons with all resulting in "non-detect".

In the middle to northern portion of the site is a fill area known as the "Central Fill Area". This area, approximately 8-10 acres, was filled in by Western Pacific during their operation. Test pits have found construction debris, railroad maintenance yard debris, asphalt, old tires, and drums of unknown liquid (probably waste motor oil) to be deposited in the Central Fill Area. Also formerly located in this area was a dirt-lined surface impoundment. The Central Fill Area is believed to be the source of the plume of groundwater contamination. Dames and Moore has recommended excavation of "hot spots" in this area as an interim remedial measure. Interim excavation would target hazardous materials with potential to impact groundwater. The fill itself is up to 15 feet deep with an average depth of 8 feet.

Dames and Moore has also conducted sampling in backyards of residences along the property line of the Union Pacific site. Three backyards along the east fence line were sampled first with homes and vacant lots to the west following. The vacant lot samples resulted in high levels of metals and the backyard samples were termed "background". An interim removal of contaminated soil was completed for the vacant lots and is referenced in the report "Interim Remedial Measures-Lots Adjacent to Union Pacific Railroad Yard".

Elevated concentrations of lead and arsenic have been found at many locations onsite and in the surrounding area. Mr. Parker and Mr. Salcedo explained that lead concentrations in the backyards of houses adjacent to the site may be attributable to lead-based paint on these houses. Mr. Salcedo reported that at some of the houses, paint chips were observed in the soil when collecting samples. According to Mr. Parker, backyard arsenic concentrations may have been caused by past pesticide use on orchards formerly in the area or by household usage. Background levels were established based on samples taken from Land Park.

Benzene contamination in groundwater has been observed near the former oil house. However, the release does not appear to be migrating. Dames and Moore is planning interim remediation including pumping and treating the groundwater.

Approximately 1,500 cubic yards of asbestos-contaminated soil are still onsite. This contaminated soil has been capped and will be addressed in the future RAP. The discovery and action on this asbestos contamination is discussed in the RI/FS Addendum report.

Other regulatory involvement on the site has been limited. Both the county and the Regional Water Quality Control Board (RWQCB) have received all reports and correspondences but have made very few comments regarding the site and neither has inspected the site.

Observations Made During Site Visit

1) Surface runoff onsite is collected by storm drain inlets. These feed to a combined storm drain-sanitary sewer line which goes to the city treatment plant (POTW) before being discharged in the river.

2) An ice company is located to the west of the site, north of Sacramento City College (SCC).

3) SCC does not use groundwater wells but uses water supplied by the city. This water is stored in a large storage tank near the Union Pacific site.

4) Along the east fence in the southern portion of the site, surface runoff may drain towards the homes. This is because the site is physically higher than the homes. In the northern portion of the site, the homes are physically higher.

5) The perimeter of the site is fenced and signs are posted saying "Caution: Hazardous Substance Area, Unauthorized Persons Keep Out".

APPENDIX B

Photo Documentation

PHOTO 1. PANORAMIC VIEW OF SITE FROM SOUTHWESTERN CORNER, FACING NORTH.

PHOTO 2. VIEW OF SITE FROM SOUTHWESTERN CORNER, FACING EAST.

PHOTO 3. CENTRAL FILL AREA, FACING NORTHEAST.

PHOTO 4. VIEW FROM NORTH OF CENTRAL FILL AREA, FACING SOUTWEST.

PHOTO 5. NORTHEAST CORNER OF SITE, DITCH WHICH CARRIES SITE RUNOFF, FACING NORTH.

PHOTO 6. RESIDENCES AT EASTERN BOUNDARY OF SITE, FACING EAST.

APPENDIX C

Latitude/Longitude Worksheet

LATITUDE AND LONGITUDE CALCULATION WORKSHEET #2
LI USING ENGINEER'S SCALE (1/60)

SITE: UNION PACIFIC CERCLIS #: CAD983581844

AKA: WESTERN PACIFIC YARD (CAD980885321) SSID: _____

ADDRESS: 3675 WESTERN PACIFIC AVENUE

CITY: SACRAMENTO STATE: CA ZIP CODE: 95818

SITE REFERENCE POINT: NORTHWEST CORNER OF FORMER MAIN SHOP BUILDING

SGS QUAD MAP NAME: SACRAMENTO EAST TOWNSHIP: 8 Ⓝ/S RANGE: 4 & 5 Ⓔ/W

SCALE: 1:24,000 MAP DATE: 1967 SECTION: 13 & 18 1/4 _____1/4 _____1/4

MAP DATUM: 1929 1983 (CIRCLE ONE) MERIDIAN: MOUNT DIABLO

COORDINATES FROM LOWER RIGHT (SOUTHEAST) CORNER OF 7.5' MAP (attach photocopy):

LONGITUDE: 121° 22' 30" LATITUDE: 38° 30' 00 "

COORDINATES FROM LOWER RIGHT (SOUTHEAST) CORNER OF 2.5' GRID CELL:

LONGITUDE: 121° 27' 30" LATITUDE: 38° 32' 30 "

CALCULATIONS: LATITUDE (7.5' QUADRANGLE MAP) 7.5' = 454 RULER DIVISIONS

A) NUMBER OF RULER GRADUATIONS FROM LATITUDE GRIN LINE TO SITE REF POINT: 13

B) MULTIPLY (A) BY 0.3304 (150/454) TO CONVERT SECONDS: A x 0.3304 = 4. 30"

C) EXPRESS IN MINUTES AND SECONDS (1' = 60"): 0 ' 04. 30"

D) ADD TO STARTING LATITUDE: 38° 32' 30. 00" + 00' 04. 30 =

SITE LATITUDE: 38° 32' 34. 30"

CALCULATIONS: LONGITUDE (7.5' QUADRANGLE MAP) 7.5' = 354 RULER DIVISIONS

A) NUMBER OF RULER GRADUATIONS FROM RIGHT LONGITUDE LINE TO SITE REF POINT: 211

B) MULTIPLY (A) BY 0.4190 (150/358) TO CONVERT TO SECONDS: A x 0.4190 = 88. 41"

C) EXPRESS IN MINUTES AND SECONDS (1' = 60"): 1' 28. 41"

D) ADD TO STARTING LONGITUDE: 121° 27' 30. 00" + 1' 28. 41 =

SITE LONGITUDE: 121° 28' 58. 41"

INVESTIGATOR: BRIAN A. OATMAN DATE: 07/21/92

WESTON SM
MANAGERS DESIGNERS/CONSULTANTS
83 WEST MARCH LANE
SUITE 12
STOCKTON, CA 95207
PHONE: (209) 476-1635

October 20, 1992

Ms. Carolyn J. Douglas
Work Assignment Manager
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

W.O. 04900-003-020-0005

SUBJECT: Preliminary Assessment Report for Union Pacific
Document Control No. 04900-003-020-AAAK

Dear Ms. Douglas:

ROY F. WESTON, INC. (WESTON) is pleased to submit the following Preliminary Assessment Report:

Site Name : Union Pacific

EPA ID # : CAD983581844

Location : Sacramento, Sacramento County, California

Also enclosed is the CERCLIS entry sheet, report transmittal list, signed Contact Reports, CERCLA file, and the CERCLA files for Western Pacific Yard, EPA ID # CAD980885321.

In response to our request for information on the site, Union Pacific's consultant Dames and Moore provided WESTON with copies of the RI/FS Report, addendums, and other related reports. These are enclosed in two boxes for addition to the CERCLA file.

Please do not hesitate to contact either myself or the PA site leader directly if you have any questions regarding the enclosed report.

Sincerely,

ROY F. WESTON, INC.

Joseph M. Demmler
PA Manager

JMD/cmc

Enclosures

cc: Wenona Garside - EPA Contracting Officer (w/o enclosures)
Sherry Nikzat - EPA Project Officer (w/o enclosures)
Frank Monahan - WESTON (w/enclosures)
Paul Sundberg - WESTON (w/enclosures)

STKC\PA LTRS\20-AAAK.WP

REPORT TRANSMITTAL

Copies of the Preliminary Assessment Report for the Union Pacific site located in Sacramento, Sacramento County, California, should be sent to the following agency/agencies or individual(s):

1. Ms. Genevieve Shiroma
   Sierra Curtis Neighborhood Association
   2791 24th Street
   Sacramento, CA 95818

2. Mr. Mel Knight
   County of Sacramento
   Hazardous Materials Division
   8475 Jackson Road, Suite 230
   Sacramento, CA 95826

3. Mr. Joe Serna, Councilman
   City of Sacramento
   915 I Street
   Sacramento, CA 95814-2672

4. Mr. Rick L. Eades, Director
   Environmental Site Remediation
   Union Pacific Railroad
   1416 Dodge Street, Room 930
   Omaha, Nebraska 68179-0930

5. Mr. Tim Parker
   Dames and Moore
   8801 Folsom Boulevard, Suite 200
   Sacramento, CA 95826

6. Ms. Antonia Vorster
   Regional Water Quality Control Board
   3443 Routier Road
   Sacramento, CA 95827-3098

7. Mr. Jose Salcedo
   Department of Toxic Substances Control
   10151 Croydon Way, Suite 3
   Sacramento, CA 95827-2106